



St. Louis Regional Clean Cities Program

Fleet Management Life Cycle Cost Analysis

Revision-August 18, 1994

(Replaces August 12, 1994 version which contained errors)

Life Cycle Cost Analysis (LCCA) is a process which permits a fleet manager to define the total fixed and operating costs of a vehicle over the entire period that it is held in his/her fleet. The most common uses are to compare:

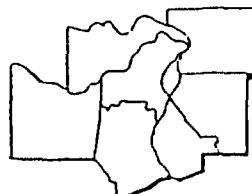
- similar vehicle models when developing a "selector list"
- financing options (e.g., lease, buy outright, or buy using credit)
- holding periods (e.g., 36 months/60,000 miles vs. 60/100,000)
- alternative fuels

Without using a modeling tool, like LCCA, a fleet manager may neglect to consider all pertinent information and miss the optimum conclusion. Of course, LCCA only helps with the number crunching part of these decisions. Non-tangible factors such as company image, employee morale, and CEO guidance often weigh more heavily than mere numbers.

You will find several examples of LCCA for some common fleet vehicles attached. The numbers are fairly accurate but should only be used as a guide for conducting your own research and analysis. These examples include comparisons of various alternative fuels available for a given vehicle model. Variables including miles driven annually, fuel economy, purchase price, tax exempt status/company tax bracket, state of operation, holding period/mileage, etc. may cause a different fuel than shown to be the best choice in your situation. One major expense not included in these examples is insurance and collision liability. Check with your carrier. If rates differ for alternative fuels, you should include them in your analysis.

In general, gaseous fueled (natural gas and propane) cost more up front but have lower fuel costs. Your best chance of breaking even or saving money is to convert/replace vehicles with poor fuel economy (15 mpg or worse) that drive many miles (20,000+) in a localized area. The worse the fuel economy and the more miles driven, the quicker the payback for the increased initial investment. The longer you hold a vehicle, the cheaper the operating cost--to a point just before many components begin failing. Look into getting fuel suppliers to cover incremental vehicle costs in exchange for long term fuel contracts at higher rates unless your accountant wants to keep your debt high. If you have vehicles like this in your fleet, convert them now and start accruing Energy Policy Act (EPACT) credits for later so you can delay converting those executive/administrative vehicles which may cost you money.

Conversely, converting compact sedans to a gaseous fuel makes no sense in most cases. It would be best to delay converting these vehicles until you must to make up the mandated percentage of new vehicle purchases. When that time comes, you'll probably want to go with an alcohol fuel



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(ethanol or methanol). The cost per mile will be more than gasoline but could be lower than gaseous fuels for short holding periods (e.g., 3-year leases) depending on fuel prices per gallon of gasoline equivalent (see fuel fact sheets). In this case, your objective is still to minimize costs. Just don't count on saving money unless the price of gasoline sky rockets and natural gas (feed stock for methanol) and corn stay low.

Life Cycle Cost Analysis Spreadsheets (Excel v 5.0)

ms-pub.xls	public fleet - can't use tax deductions or credits in EPACT but also exempt from sales tax, licensing, and federal fuel taxes; note that the price of propane is less than natural gas when federal tax exempt
ms-pri.xls	private fleet - receive tax deductions on up to \$2,000 incremental cost at their tax rate (34% used here) but are subject to sales tax, licensing, and federal fuel taxes; note that the price of natural gas is lower than propane
ms-pri2.xls	private fleet - same as above except shows the results of adding three years interest (prime) instead of buying outright
ls-pub.xls	public (police) fleet - demonstrates the difference in economics for less fuel efficient sedans with higher mileage; note that taxi companies are likely to be the same
mv-pub.xls	public fleet - minivans operated 20,000 miles/year
mv-pub2/pri/pri2.xls	public/private fleet - minivans operated 40,000 miles/year produce greater savings; NOTE: If your operations require larger, less fuel efficient vans, they can be operated at even greater savings
pu-pub/pri.xls	public/private fleet - pickup trucks can be operated at break-even/savings
pu-pri2.xls	private fleet - pickup trucks with poor fuel economy can be operated at even greater savings

Notes:

1. Base price is what you get the vehicle for without the cost of the alternative fuel option or after-market conversion. For other type of LCCA, you may split out the dealer cost (triple net), markup, delivery, incentives, etc. separately. These examples have been simplified because the intent is not to compare different models or dealers where the greater detail would be meaningful to the evaluation.
2. Tax credits (deductions) are available under EPACT for the incremental cost of a vehicle up to a maximum based on vehicle size. These deductions are based on the light vehicle limit of \$2,000 at a 34% federal income tax rate.

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3. Resale value is based on wholesale auction data. This is the softest and most dangerous number in the LCCA examples. Because no actual data is available, it is assumed that the sale price of alcohol fueled models will be comparable to those using gasoline because they will run on straight gasoline too. It is assumed that gaseous fueled models will either sell for a higher amount (unlikely unless a market develops) or that the vehicles were converted back to run on gasoline and the fuel cylinders reused (most common practice currently).
4. Gallon of gasoline equivalency (GGE) takes into consideration that alternative fuels are less efficient than gasoline (i.e., it takes more of them to travel the same distance). It is assumed that miles per gallon will be comparable after adjusting for GGE. In fact, some vehicles get better and some worse mileage. Dedicated vehicles have the best chance of being optimized for the alternative fuel so this assumption is most likely to hold in that case. If you choose to bi-fuel natural gas or propane, plan on worse mileage when operating on the alternative fuel.
5. Gallon of gasoline equivalency (GGE) takes into consideration that alternative fuels are less efficient than gasoline (i.e., it takes more of them to travel the same distance). For this reason, the price is adjusted to account for the increased volume needed so you are comparing "apples to apples". Don't be misled by the pump price of an alternative fuel being close to gasoline if the unit of measure is not GGE.
6. Maintenance costs can be derived from actual experience, provided by a leasing company, or estimated based on the cost and frequency you expect for various components to fail added to routine service costs. Maintenance for alcohol fueled vehicles is a little higher due to the need for special oil (to resist breakdown from fuel residue in crank case), increased oil change intervals, increased plug replacement intervals (corrosive), and breakdown of seals and gaskets in contact with the fuel or exhaust. The opposite is true of gaseous fuels which leave virtually no residue in the engine and do not attack engine parts.

For further explanation you may contact Chris Amos, Fleet Administrator, St. Louis County Government at (314) 854-6115.

Life Cycle Cost Analysis

Mid-size Sedan - 1994 Ford Taurus GL, L4, 3.0/6

Private Fleet: Assumes vehicles purchased (outright) and operating 20,000 miles/year in Missouri

	36 months/60,000 miles				60 months/100,000 miles				72 months/120,000 miles						
	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG	M85	E85
Capitalized Cost															
Base Price[1]	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	
OEM Option/Conversion Cost	0	3,600	1,980	0	0	3,600	1,980	0	0	0	3,600	1,980	0	0	
Tax Credit [2]	0	(680)	(673)	0	0	(680)	(673)	0	0	0	(680)	(673)	0	0	
Capitalized Cost	13,725	16,645	15,032	13,725	13,725	16,645	15,032	13,725	13,725	13,725	16,645	15,032	13,725	13,725	
Ownership Cost															
Sales Tax @ 6.4%	878	1,065	962	878	878	1,065	962	878	878	878	1,065	962	878	878	
License Cost	72	72	72	72	72	120	120	120	120	120	144	144	144	144	
Capitalized Cost	13,725	16,645	15,032	13,725	13,725	16,645	15,032	13,725	13,725	13,725	16,645	15,032	13,725	13,725	
Less Resale[3]	(5,130)	(6,630)	(6,430)	(5,130)	(5,130)	(4,810)	(4,610)	(3,310)	(3,310)	(3,310)	(2,016)	(3,516)	(3,316)	(2,016)	
Depreciation	8,595	10,015	8,602	8,595	8,595	10,415	11,835	10,422	10,415	10,415	11,709	13,129	11,716	11,709	
Total Ownership Cost	9,545	11,152	9,636	9,545	9,545	11,413	13,020	11,504	11,413	11,413	12,731	14,336	12,822	12,731	
Operating Costs															
Estimated Miles Per Gallon/GGE[4]	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Cost of Fuel Per Gallon/GGE[5]	1,119	0.686	0.784	1,663	1,679	1,119	0.686	0.784	1,663	1,679	1,119	0.686	0.784	1,663	
Annual Decal (\$75)	0	225	225	0	0	0	0	375	375	0	0	0	450	450	
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	60,000	60,000	100,000	100,000	100,000	100,000	120,000	120,000	120,000	120,000	120,000	
Total Fuel Costs	3,357	2,283	2,577	4,989	5,037	5,595	3,805	4,295	8,315	8,395	6,714	4,566	5,154	9,978	
Total Maintenance Costs[6]	798	732	732	897	897	1,797	1,648	1,648	2,019	2,019	2,156	1,978	1,978	2,423	
Total Operating Costs	4,155	3,015	3,309	5,886	5,934	7,392	5,453	5,943	10,334	10,414	8,870	6,544	7,132	12,401	
Total Fixed and Operating Costs	13,700	14,167	12,945	15,431	15,479	18,805	18,473	17,447	21,747	21,827	21,602	20,882	19,953	25,132	
Life Cycle Cost Per Mile	0.23	0.24	0.22	0.26	0.26	0.19	0.18	0.17	0.22	0.22	0.18	0.17	0.17	0.21	

NOTES: [see attached]

Life Cycle Cost Analysis

Mid-size Sedan - 1994 Ford Taurus GL, L4, 3.0/6

Private Fleet: Assumes vehicles purchased (borrowed at prime for 36 months) and operating 20,000 miles/year in Missouri!

	36 months/60,000 miles						60 months/100,000 miles						72 months/120,000 miles							
	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG		
Capitalized Cost																				
Base Price[1]	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725		
OEM Option/Conversion Cost	0	3,600	1,980	0	0	0	3,600	1,980	0	0	0	3,600	1,980	0	0	0	0	0	0	
Tax Credit [2]	0	(680)	(673)	0	0	0	(680)	(673)	0	0	0	(680)	(673)	0	0	0	0	0	0	
Capitalized Cost	13,725	16,645	15,032	13,725	13,725	13,725	16,645	15,032	13,725	13,725	13,725	16,645	15,032	13,725	13,725	13,725	13,725	13,725	13,725	
Ownership Cost																				
Interest Year 1	1,030	1,249	1,128	1,030	1,030	1,030	1,249	1,128	1,030	1,030	1,030	1,249	1,128	1,030	1,030	1,030	1,030	1,030	1,030	
Interest Year 2	651	789	713	651	651	651	789	713	651	651	651	789	713	651	651	651	651	651	651	
Interest Year 3	238	288	260	238	238	238	288	260	238	238	238	288	260	238	238	238	238	238	238	
Total Interest @ 7.65%	1,918	2,326	2,101	1,918	1,918	1,918	2,326	2,101	1,918	1,918	1,918	2,326	2,101	1,918	1,918	1,918	1,918	1,918	1,918	
Sales Tax @ 6.4%	878	1,065	962	878	878	878	1,065	962	878	878	878	1,065	962	878	878	878	878	878	878	
License Cost	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	
Capitalized Cost	13,725	16,645	15,032	13,725	13,725	13,725	16,645	15,032	13,725	13,725	13,725	16,645	15,032	13,725	13,725	13,725	13,725	13,725	13,725	
Less Resale[3]	(5,130)	(6,630)	(6,430)	(5,130)	(5,130)	(5,130)	(3,310)	(4,810)	(4,610)	(3,310)	(3,310)	(2,016)	(3,516)	(3,310)	(2,016)	(3,310)	(2,016)	(3,310)	(2,016)	(2,016)
Depreciation	8,595	10,015	8,602	8,595	8,595	10,415	11,835	10,422	10,415	10,415	10,415	11,709	13,129	11,716	11,709	11,709	11,709	11,709	11,709	11,709
Total Ownership Cost	11,464	13,479	11,737	11,464	11,464	13,332	15,347	13,605	13,332	13,332	13,332	14,650	16,665	14,923	14,650	14,650	14,650	14,650	14,650	
Operating Costs																				
Estimated Miles Per Gallon/GGE[4]	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Cost of Fuel Per Gallon/GGE[5]	0.686	0.784	1.663	1.679	1.119	0.686	0.784	1.663	1.679	1.119	0.686	0.784	1.663	1.679	1.119	0.686	1.663	1.679	1.679	
Annual Deal (\$75)	0	225	225	0	0	0	375	375	0	0	0	450	450	0	0	0	0	0	0	
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	60,000	60,000	100,000	100,000	100,000	100,000	100,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	
Total Fuel Costs	3,357	2,283	2,577	4,989	5,037	5,595	3,805	4,295	8,315	8,395	6,714	4,566	5,154	9,978	10,074					
Total Maintenance Cost[6]	798	732	732	897	897	1,797	1,648	2,019	2,019	2,156	1,978	1,978	2,423	2,423						
Total Operating Costs	4,155	3,015	3,309	5,886	5,934	7,392	5,453	5,943	10,334	10,414	8,870	6,544	7,132	12,401	12,497					
Total Fixed and Operating Costs	15,619	16,494	15,046	17,350	17,398	20,724	20,800	19,548	23,666	23,746	23,520	23,208	22,054	27,051	27,147					
Life Cycle Cost Per Mile	0.26	0.27	0.25	0.29	0.21	0.21	0.20	0.24	0.24	0.20	0.19	0.18	0.23	0.23	0.23					
NOTES: [see attached]																				

Life Cycle Cost Analysis

Mid-size Sedan - 1994 Ford Taurus GL, L4, 3.0/6

Public Fleet: Assumes vehicles purchased (outright) and operating 20,000 miles/year in Missouri

	36 months/60,000 miles				60 months/100,000 miles				72 months/120,000 miles						
	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG	M85	E85	Gasoline	CNG	LPG	M85	E85
Capitalized Cost															
Base Price[1]	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	13,725	
OEM Option/Conversion Cost	0	3,600	1,980	0	0	0	3,600	1,980	0	0	3,600	1,980	0	0	
Capitalized Cost	13,725	17,325	15,705	13,725	13,725	13,725	17,325	15,705	13,725	13,725	17,325	15,705	13,725	13,725	
Ownership Cost															
Capitalized Cost	13,725	17,325	15,705	13,725	13,725	13,725	17,325	15,705	13,725	13,725	17,325	15,705	13,725	13,725	
Less Resale[3]	(5,130)	(6,630)	(6,430)	(5,130)	(5,130)	(3,310)	(4,810)	(4,610)	(3,310)	(3,310)	(2,016)	(3,516)	(3,316)	(2,016)	
Depreciation	8,595	10,695	9,275	8,595	8,595	10,415	12,515	11,095	10,415	10,415	11,709	13,809	12,389	11,709	
Total Ownership Cost	8,595	10,695	9,275	8,595	8,595	10,415	12,515	11,095	10,415	10,415	11,709	13,809	12,389	11,709	
Operating Costs															
Estimated Miles Per Gallon/GGE[4]	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Cost of Fuel Per Gallon/GGE[5]	0.991	0.625	0.589	1.333	1.371	0.991	0.625	0.589	1.333	1.371	0.991	0.625	0.589	1.333	
Annual Decal (\$75)	0	225	225	0	0	0	375	375	0	0	0	450	450	0	
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	60,000	60,000	100,000	100,000	100,000	100,000	120,000	120,000	120,000	120,000	120,000	
Total Fuel Costs	2,973	2,100	1,992	3,999	4,113	4,955	3,500	3,320	6,655	6,855	5,946	4,200	3,984	7,998	
Total Maintenance Cost[6]	798	732	732	897	897	1,797	1,648	1,648	2,019	2,156	1,978	1,978	2,423	2,423	
Total Operating Costs	3,771	2,832	2,724	4,896	5,010	6,752	5,148	4,968	8,684	8,874	8,102	6,178	5,962	10,421	
Total Fixed and Operating Costs	12,366	13,527	11,999	13,491	13,605	17,167	17,663	16,063	19,099	19,289	19,811	19,987	18,351	22,130	
Life Cycle Cost Per Mile	0.21	0.23	0.20	0.22	0.23	0.17	0.18	0.16	0.19	0.19	0.17	0.17	0.15	0.18	

NOTES: [See attached]

Life Cycle Cost Analysis

Large Sedan - 1994 Chevrolet Caprice, L4, 5.7/8 (Police)
Public (Police) Fleet: Assumes vehicles purchased (outright) and operating
40,000 miles/year in Missouri

36 months/120,000 miles 48 months/160,000 miles

	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost						
Base Price[1]	13,250	13,250	13,250	13,250	13,250	13,250
OEM Option/Conversion Cost	0	3,600	1,850	0	3,600	1,850
Capitalized Cost	13,250	16,850	15,100	13,250	16,850	15,100
Ownership Cost						
Capitalized Cost	13,250	16,850	15,100	13,250	16,850	15,100
Less Resale[3]	(3,000)	(4,500)	(4,000)	(1,200)	(2,700)	(2,200)
Depreciation	10,250	12,350	11,100	12,050	14,150	12,900
Total Ownership Cost	10,250	12,350	11,100	12,050	14,150	12,900
Operating Costs						
Estimated Miles Per Gallon/GGE[4]	10	10	10	10	10	10
Cost of Fuel Per Gallon/GGE[5]	0.991	0.625	0.589	0.991	0.625	0.589
Annual Decal (\$75)	0	225	225	0	300	300
Life Cycle Mileage @ 20,000 miles/year	120,000	120,000	120,000	160,000	160,000	160,000
Total Fuel Costs	11,892	7,725	7,293	15,856	10,300	9,724
Total Maintenance Cost[6]	6,000	5,880	5,880	8,000	7,840	7,840
Total Operating Costs	17,892	13,605	13,173	23,856	18,140	17,564
Total Fixed and Operating Costs	28,142	25,955	24,273	35,906	32,290	30,464
Life Cycle Cost Per Mile	0.23	0.22	0.20	0.22	0.20	0.19

NOTES: [see attached]

Life Cycle Cost Analysis

Minivan - 1994 Dodge Caravan, 2WD, L3, 3.0/6

Public Fleet: Assumes vehicles purchased (outright) and operating 20,000 miles/year in Missouri

	36 months/60,000 miles			60 months/100,000 miles			72 months/120,000 miles		
	Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost									
Base Price[1]	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464
OEM Option/Conversion Cost	0	3,600	2,347	0	3,600	2,347	0	3,600	2,347
Capitalized Cost	14,464	18,064	16,811	14,464	18,064	16,811	14,464	18,064	16,811
Ownership Cost									
Capitalized Cost	14,464	18,064	16,811	14,464	18,064	16,811	14,464	18,064	16,811
Less Resale[3]	(9,390)	(11,390)	(10,890)	(6,990)	(8,990)	(8,590)	(4,670)	(6,670)	(6,170)
Depreciation	5,074	6,674	5,921	7,474	9,074	8,221	9,794	11,394	10,641
Total Ownership Cost	5,074	6,674	5,921	7,474	9,074	8,221	9,794	11,394	10,641
Operating Costs									
Estimated Miles Per Gallon/GGE[4]	19	19	19	19	19	19	19	19	19
Cost of Fuel Per Gallon/GGE[5]	0.991	0.625	0.589	0.991	0.625	0.589	0.991	0.625	0.589
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	100,000	100,000	100,000	120,000	120,000	120,000
Total Fuel Costs	3,129	2,199	2,085	5,216	3,664	3,475	6,259	4,397	4,170
Total Maintenance Cost[6]	798	732	732	1,797	1,648	1,648	2,156	1,978	1,978
Total Operating Costs	3,927	2,931	2,817	7,013	5,312	5,123	8,415	6,375	6,148
Total Fixed and Operating Costs	9,001	9,605	8,738	14,487	14,386	13,344	18,209	17,769	16,789
Life Cycle Cost Per Mile	0.15	0.16	0.15	0.14	0.14	0.13	0.15	0.15	0.14

NOTES: [see attached]

Life Cycle Cost Analysis

Minivan - 1994 Dodge Caravan, 2WD, L3, 3.0/6

Public Fleet: Assumes vehicles purchased (outright) and operating 30,000 miles/year in Missouri

		36 months/90,000 miles			60 months/150,000 miles			72 months/180,000 miles		
		Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost										
Base Price[1]	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464
OEM Option/Conversion Cost	0	3,600	2,347	0	3,600	2,347	0	3,600	2,347	0
Capitalized Cost	14,464	18,064	16,811	14,464	18,064	16,811	14,464	18,064	16,811	14,464
Ownership Cost										
Capitalized Cost	14,464	18,064	16,811	14,464	18,064	16,811	14,464	18,064	16,811	14,464
Less Resale[3]	(7,512)	(9,112)	(8,712)	(5,592)	(7,192)	(6,872)	(3,736)	(5,336)	(4,936)	(4,936)
Depreciation	6,952	8,952	8,099	8,872	10,872	9,939	10,728	12,728	11,875	
Total Ownership Cost	6,952	8,952	8,099	8,872	10,872	9,939	10,728	12,728	11,875	
Operating Costs										
Estimated Miles Per Gallon/GGE[4]	19	19	19	19	19	19	19	19	19	19
Cost of Fuel Per Gallon/GGE[5]	0.991	0.625	0.589	0.991	0.625	0.589	0.991	0.625	0.589	0.589
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450	450
Life Cycle Mileage @ 20,000 miles/year	90,000	90,000	90,000	150,000	150,000	150,000	180,000	180,000	180,000	180,000
Total Fuel Costs	4,694	3,186	3,015	7,824	5,309	5,025	9,388	6,371	6,030	
Total Maintenance Cost[6]	798	732	732	1,797	1,648	1,648	2,156	1,978	1,978	1,978
Total Operating Costs	5,492	3,918	3,747	9,621	6,957	6,673	11,545	8,349	8,008	
Total Fixed and Operating Costs	12,444	12,870	11,846	18,493	17,829	16,612	22,273	21,077	19,883	
Life Cycle Cost Per Mile	0.14	0.14	0.13	0.12	0.12	0.11	0.12	0.12	0.11	

NOTES: [see attached]

Life Cycle Cost Analysis

Minivan - 1994 Dodge Caravan, 2WD, L3, 3.0/6

Private Fleet: Assumes vehicles purchased (outright) and operating 30,000 miles/year in Missouri

	36 months/90,000 miles			60 months/150,000 miles			72 months/180,000 miles		
	Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost									
Base Price[1]	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464
OEM Option/Conversion Cost	0	3,600	2,347	0	3,600	2,347	0	3,600	2,347
Tax Credit [2]	0	(680)	(680)	0	(680)	(680)	0	(680)	(680)
Capitalized Cost	14,464	17,384	16,131	14,464	17,384	16,131	14,464	17,384	16,131
Ownership Cost									
Sales Tax @ 6.4%	926	1,113	1,032	926	1,113	1,032	926	1,113	1,032
License Cost	72	72	72	120	120	120	144	144	144
Capitalized Cost	14,464	17,384	16,131	14,464	17,384	16,131	14,464	17,384	16,131
Less Resale[3]	(7,512)	(9,112)	(8,712)	(5,592)	(7,192)	(6,872)	(3,736)	(5,336)	(4,936)
Depreciation	6,952	8,272	7,419	8,872	10,192	9,259	10,728	12,048	11,195
Total Ownership Cost	7,950	9,457	8,523	9,918	11,425	10,411	11,798	13,305	12,371
Operating Costs									
Estimated Miles Per Gallon/GGE[4]	19	19	19	19	19	19	19	19	19
Cost of Fuel Per Gallon/GGE[5]	1.119	0.686	0.784	1.119	0.686	0.784	1.119	0.686	0.784
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450
Life Cycle Mileage @ 20,000 miles/year	90,000	90,000	90,000	150,000	150,000	150,000	180,000	180,000	180,000
Total Fuel Costs	5,301	3,474	3,939	8,834	5,791	6,564	10,601	6,949	7,877
Total Maintenance Cost[6]	958	878	878	2,156	1,978	1,978	2,588	2,373	2,373
Total Operating Costs	6,258	4,353	4,817	10,991	7,768	8,542	13,189	9,322	10,250
Total Fixed and Operating Costs	14,208	13,809	13,340	20,908	19,193	18,953	24,986	22,627	22,622
Life Cycle Cost Per Mile	0.16	0.15	0.15	0.14	0.13	0.13	0.14	0.13	0.13

NOTES: [see attached]

Life Cycle Cost Analysis

Minivan - 1994 Dodge Caravan, 2WD, L3, 3.0/6

Private Fleet: Assumes vehicles purchased (borrowed at prime for 36 months) and operating 30,000 miles/year in Missouri

	36 months/90,000 miles			60 months/150,000 miles			72 months/180,000 miles		
	Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost									
Base Price[1]	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464	14,464
OEM Option/Conversion Cost	0	3,600	2,347	0	3,600	2,347	0	3,600	2,347
Tax Credit [2]	0	(680)	(680)	0	(680)	(680)	0	(680)	(680)
Capitalized Cost	14,464	17,384	16,131	14,464	17,384	16,131	14,464	17,384	16,131
Ownership Cost									
Interest Year 1	1,085	1,304	1,210	1,085	1,304	1,210	1,085	1,304	1,210
Interest Year 2	686	824	765	686	824	765	686	824	765
Interest Year 3	250	301	279	250	301	279	250	301	279
Total Interest @ 7.65%	2,022	2,430	2,255	2,022	2,430	2,255	2,022	2,430	2,255
Sales Tax @ 6.4%	926	1,113	1,032	926	1,113	1,032	926	1,113	1,032
License Cost	72	72	72	120	120	120	144	144	144
Capitalized Cost	14,464	17,384	16,131	14,464	17,384	16,131	14,464	17,384	16,131
Less Resale[3]	(7,512)	(9,112)	(8,712)	(5,592)	(7,192)	(6,872)	(3,736)	(5,336)	(4,936)
Depreciation	6,952	8,272	7,419	8,872	10,192	9,259	10,728	12,048	11,195
Total Ownership Cost	9,971	11,886	10,778	11,939	13,854	12,666	13,819	15,734	14,626
Operating Costs									
Estimated Miles Per Gallon/GGE[4]	19	19	19	19	19	19	19	19	19
Cost of Fuel Per Gallon/GGE[5]	1.019	0.686	0.784	1.019	0.686	0.784	1.019	0.686	0.784
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450
Life Cycle Mileage @ 20,000 miles/year	90,000	90,000	90,000	150,000	150,000	150,000	180,000	180,000	180,000
Total Fuel Costs	4,827	3,474	3,939	8,045	5,791	6,564	9,654	6,949	7,877
Total Maintenance Cost[6]	958	878	878	2,156	1,978	1,978	2,588	2,373	2,373
Total Operating Costs	5,784	4,353	4,817	10,201	7,768	8,542	12,241	9,322	10,250
Total Fixed and Operating Costs	15,756	16,239	15,595	22,140	21,623	21,208	26,061	25,056	24,877
Life Cycle Cost Per Mile	0.18	0.18	0.17	0.15	0.14	0.14	0.14	0.14	0.14

NOTES: [see attached]

Life Cycle Cost Analysis

Standard Pickup - 1994 Chevrolet C2500, 2WD, L4, 4.30/6

Public Fleet: Assumes vehicles purchased (outright) and operating 20,000 miles/year in Missouri

	36 months/60,000 miles			60 months/100,000 miles			72 months/120,000 miles		
	Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost									
Base Price[1]	15,524	15,524	15,524	15,524	15,524	15,524	15,524	15,524	15,524
OEM Option/Conversion Cost	0	4,400	1,815	0	4,400	1,815	0	4,400	1,815
Capitalized Cost	15,524	19,924	17,339	15,524	19,924	17,339	15,524	19,924	17,339
Ownership Cost									
Capitalized Cost	15,524	19,924	17,339	15,524	19,924	17,339	15,524	19,924	17,339
Less Resale[3]	(10,490)	(12,490)	(11,990)	(3,780)	(5,780)	(5,280)	(3,370)	(5,370)	(4,870)
Depreciation	5,034	7,434	5,349	11,744	14,144	12,059	12,154	14,554	12,469
Total Ownership Cost	5,034	7,434	5,349	11,744	14,144	12,059	12,154	14,554	12,469
Operating Costs									
Estimated Miles Per Gallon/GGE[4]	15	15	15	15	15	15	15	15	15
Cost of Fuel Per Gallon/GGE[5]	0.991	0.625	0.589	0.991	0.625	0.589	0.991	0.625	0.589
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	100,000	100,000	100,000	120,000	120,000	120,000
Total Fuel Costs	3,964	2,725	2,581	6,607	4,542	4,302	7,928	5,450	5,162
Total Maintenance Cost[6]	886	820	820	1,973	1,824	1,824	2,368	2,189	2,189
Total Operating Costs	4,850	3,545	3,401	8,580	6,366	6,126	10,296	7,639	7,351
Total Fixed and Operating Costs	9,884	10,979	8,750	20,324	20,510	18,185	22,450	22,193	19,820
Life Cycle Cost Per Mile	0.16	0.18	0.15	0.20	0.21	0.18	0.19	0.18	0.17

NOTES: [see attached]

Life Cycle Cost Analysis

Standard Pickup - 1994 Chevrolet C2500, 2WD, L4, 4.30/6

Private Fleet: Assumes vehicles purchased (outright) and operating 20,000 miles/year in Missouri

	36 months/60,000 miles			60 months/100,000 miles			72 months/120,000 miles		
	Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost									
Base Price[1]	15,524	15,524	15,524	15,524	15,524	15,524	15,524	15,524	15,524
OEM Option/Conversion Cost	0	4,400	1,815	0	4,400	1,815	0	4,400	1,815
Tax Credit [2]	0	(680)	(617)	0	(680)	(617)	0	(680)	(617)
Capitalized Cost	15,524	19,244	16,722	15,524	19,244	16,722	15,524	19,244	16,722
Ownership Cost									
Sales Tax @ 6.4%	994	1,232	1,070	994	1,232	1,070	994	1,232	1,070
License Cost	72	72	72	120	120	120	144	144	144
Capitalized Cost	15,524	19,244	16,722	15,524	19,244	16,722	15,524	19,244	16,722
Less Resale[3]	(10,490)	(12,490)	(11,990)	(3,780)	(5,780)	(5,280)	(3,370)	(5,370)	(4,870)
Depreciation	5,034	6,754	4,732	11,744	13,464	11,442	12,154	13,874	11,852
Total Ownership Cost	6,100	8,058	5,874	12,858	14,816	12,632	13,292	15,250	13,066
Operating Costs									
Estimated Miles Per Gallon/GGE[4]	15	15	15	15	15	15	15	15	15
Cost of Fuel Per Gallon/GGE[5]	1.119	0.686	0.784	1.119	0.686	0.784	1.119	0.686	0.784
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	100,000	100,000	100,000	120,000	120,000	120,000
Total Fuel Costs	4,476	2,969	3,361	7,460	4,948	5,602	8,952	5,938	6,722
Total Maintenance Cost[6]	886	820	820	1,973	1,824	1,824	2,368	2,189	2,189
Total Operating Costs	5,362	3,789	4,181	9,433	6,772	7,426	11,320	8,127	8,911
Total Fixed and Operating Costs	11,462	11,847	10,055	22,291	21,588	20,058	24,611	23,376	21,977
Life Cycle Cost Per Mile	0.19	0.20	0.17	0.22	0.22	0.20	0.21	0.19	0.18

NOTES: [see attached]

Life Cycle Cost Analysis

Standard Pickup - 1994 Chevrolet C2500, 2WD, L4, 4.30/6

Private Fleet: Assumes vehicles purchased (outright) and operating 20,000 miles/year in Missouri [worse MPG]

	36 months/60,000 miles			60 months/100,000 miles			72 months/120,000 miles		
	Gasoline	CNG	LPG	Gasoline	CNG	LPG	Gasoline	CNG	LPG
Capitalized Cost									
Base Price[1]	15,524	15,524	15,524	15,524	15,524	15,524	15,524	15,524	15,524
OEM Option/Conversion Cost	0	4,400	1,815	0	4,400	1,815	0	4,400	1,815
Tax Credit [2]	0	(680)	(617)	0	(680)	(617)	0	(680)	(617)
Capitalized Cost	<u>15,524</u>	<u>19,244</u>	<u>16,722</u>	<u>15,524</u>	<u>19,244</u>	<u>16,722</u>	<u>15,524</u>	<u>19,244</u>	<u>16,722</u>
Ownership Cost									
Sales Tax @ 6.4%	994	1,232	1,070	994	1,232	1,070	994	1,232	1,070
License Cost	72	72	72	120	120	120	144	144	144
Capitalized Cost	15,524	19,244	16,722	15,524	19,244	16,722	15,524	19,244	16,722
Less Resale[3]	(10,490)	(12,490)	(11,990)	(3,780)	(5,780)	(5,280)	(3,370)	(5,370)	(4,870)
Depreciation	5,034	6,754	4,732	11,744	13,464	11,442	12,154	13,874	11,852
Total Ownership Cost	<u>6,100</u>	<u>8,058</u>	<u>5,874</u>	<u>12,858</u>	<u>14,816</u>	<u>12,632</u>	<u>13,292</u>	<u>15,250</u>	<u>13,066</u>
Operating Costs									
Estimated Miles Per Gallon/GGE[4]	11	11	11	11	11	11	11	11	11
Cost of Fuel Per Gallon/GGE[5]	0.686	0.784	1.119	0.686	0.784	1.119	0.686	0.784	0.784
Annual Decal (\$75)	0	225	225	0	375	375	0	450	450
Life Cycle Mileage @ 20,000 miles/year	60,000	60,000	60,000	100,000	100,000	100,000	120,000	120,000	120,000
Total Fuel Costs	<u>6,104</u>	<u>3,967</u>	<u>4,501</u>	<u>10,173</u>	<u>6,611</u>	<u>7,502</u>	<u>12,207</u>	<u>7,934</u>	<u>9,003</u>
Total Maintenance Cost[6]	<u>886</u>	<u>820</u>	<u>820</u>	<u>1,973</u>	<u>1,824</u>	<u>1,824</u>	<u>2,368</u>	<u>2,189</u>	<u>2,189</u>
Total Operating Costs	<u>6,990</u>	<u>4,787</u>	<u>5,321</u>	<u>12,146</u>	<u>8,435</u>	<u>9,326</u>	<u>14,575</u>	<u>10,122</u>	<u>11,192</u>
Total Fixed and Operating Costs	<u>13,089</u>	<u>12,844</u>	<u>11,195</u>	<u>25,003</u>	<u>23,251</u>	<u>21,958</u>	<u>27,866</u>	<u>25,372</u>	<u>24,258</u>
Life Cycle Cost Per Mile	<u>0.22</u>	<u>0.21</u>	<u>0.19</u>	<u>0.25</u>	<u>0.23</u>	<u>0.22</u>	<u>0.23</u>	<u>0.21</u>	<u>0.20</u>
NOTES: [see attached]									